

WHAT IS CLAIMED IS:

- 1 1. A method comprising:
 2 receiving configuration data that indicates which one of a plurality of memory
 3 controllers will support each of a plurality of clients,
 4 receiving data access requests from each of the plurality of clients; and
 5 routing each of the data access requests to one of the plurality of memory controllers
 6 based on the configuration data.
- 1 2. The method as in Claim 1, wherein the plurality of clients and the plurality of
 2 memory controllers are integrated on a single device.
- 1 3. The method as in Claim 2, wherein the single device is a semiconductor device.
- 1 4. The method as in Claim 3, wherein the semiconductor device includes a graphics
 2 controller.
- 1 5. The method as in Claim 1, wherein data access requests routed to the plurality of
 2 memory controllers are executed by the plurality of memory controllers in the order
 3 in which the data access requests are received.
- 1 6. The method as in Claim 1, wherein the plurality of clients include at least two clients
 2 having a common client type.
- 1 7. The method as in Claim 6, wherein the common client type includes one of the group
 2 of a two-dimensional graphics driver, a three dimensional graphics driver, and an
 3 audio driver.

- 1 8. The method as in Claim 6, wherein the step of routing includes routing access
2 requests from a first client having the common client type to a first memory controller
3 and routing access requests from a second client having the common client type to a
4 second memory controller.
- 1 9. The method as in Claim 8, wherein the first memory controller executes a first portion
2 of an access request and the second memory controller executes a second portion of
3 the access request.
- 1 10. The method as in Claim 6, wherein the step of routing includes routing access
2 requests from a first client having the common client type to a first memory controller
3 and routing access requests from a second client having the common client type to the
4 first memory controller.
- 1 11. The method as in Claim 6, wherein the step of routing includes routing a first access
2 request from a first client having the common client type to a first memory controller
3 and routing a second access request from a second client having the common client
4 type to the first memory controller, wherein the first and second access requests are
5 simultaneously pending at the first memory controller.
- 1 12. The method as in Claim 11 further comprising a step of prioritizing one of the first
2 access request and the second access request based upon a predefined arbitration
3 scheme.
- 1 13. The method as in Claim 12, wherein the predefined arbitration scheme is a round
2 robin arbitration scheme.

1 14. The method as in Claim 12, wherein the predefined arbitration scheme prioritizes
2 access requests from the first client over access requests from the second client.

1 15. The method as in Claim 11 further comprising a step of prioritizing one of the first
2 access request and the second access request based upon a first predefined arbitration
3 scheme when the first and the second access requests are from clients having a first
4 common client type, and prioritizing one of the first access request and the second
5 access request based upon a second predefined arbitration scheme when the first and
6 the second access requests are from clients having a first common client type.

1 16. The method as in Claim 15, wherein a priority assigned to the access requests is
2 dynamic.

1 17. The method as in Claim 16, wherein the priority assigned depends on an identifier
2 within the access request.

1 18. The method as in Claim 16, wherein the priority assigned depends on an internal
2 timer.

1 19. The method as in Claim 1, wherein client requests are routed based on one or more
2 of: an address, a client identifier, client tag information, and data size.

1 20. The method as in Claim 1, wherein the number of requests routed to a memory
2 controller, from a particular client, is dependent on the data rate of the particular
3 client.

1 21. The method as in Claim 1, wherein the plurality of memory controllers are scalable.

22. The method as in Claim 1, wherein:
the step of receiving data access requests includes receiving a first HDTV stream and
a second HDTV stream; and
the step of routing includes:
routing the first HDTV stream to the first memory controller; and
routing the second HDTV stream to the second memory controller.

23. The method as in Claim 1, wherein one of the plurality of memory controllers is dedicated for use in handling requests received from a high-data rate client, where the high-data rate client requests a greater amount of data than other clients.

| Year | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 | 2100 |
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1 24. An apparatus comprising:
2 a storage module having a memory location and an output port, the memory location
3 to store data;
4 a plurality of clients, each of the plurality of clients having a data access port;
5 a router having a plurality of first-input ports coupled to the data access port of each
6 of the plurality of clients, a second input port coupled to the output port of the
7 storage module, a first plurality of output ports, and a second plurality of
8 output ports, wherein the router is to route data at one each one of its plurality
9 of first- input ports to its respective output port of the first or second output
10 port based upon the data stored in the storage module;
11 a first memory controller having a plurality of input ports coupled to the first plurality
12 of output ports of the router;
13 a second memory controller having a plurality of input ports coupled to the second
14 plurality of output ports of the router; and
15 a first arbiter having a plurality of input ports coupled to the first plurality of output
16 ports of the router, and an output port, wherein the first arbiter selects one a
17 data access request on one of the first plurality of input ports to be provide to
18 the output port.

1 25. The apparatus of claim 24, further including:
2 a second arbiter to receive a plurality of client requests from a plurality of clients, to
3 route each of said requests to one of a plurality of memory controllers based
4 on a programmable value; and
5 a plurality of memory controllers to order client requests, and to deliver said ordered
6 client requests to memory, at least two of the plurality of clients having a
7 common type.

1 26. The apparatus as in Claim 24, wherein said first memory controller and said second
2 memory controller include arbiters, said arbiters to order client requests.

- 1 27. The apparatus as in Claim 26, wherein said arbiters perform round robin arbitration
2 between clients having a common type.
- 1 28. The apparatus as in Claim 26, wherein said arbiters performing a first arbitration
2 between clients having a common type, and a second arbitration between clients
3 having different types.
- 1 29. The apparatus as in Claim 24, wherein said router routes a first client request from a
2 first client to a first memory controller, and routes a second client request from a
3 second client, the second client being the same client type as the first client, to a
4 second memory controller.
- 1 30. The apparatus as in Claim 24, wherein said router routes the client requests based on
2 one or more of: an address, a client identifier, client tag information, and data size.
- 1 31. The apparatus as in Claim 24, wherein the number of requests routed to a memory
2 controller, from a particular client, is dependent on the data rate of the particular
3 client.
- 1 32. The apparatus as in Claim 24, wherein said plurality of memory controllers are
2 scalable.
- 1 33. The apparatus as in Claim 24, wherein:
2 said router receives a first HDTV stream from a first client and a second HDTV
3 stream from a second client; and wherein
4 said router routes the first HDTV stream to a first memory controller and routes the
5 second HDTV stream to a second memory controller.

- 1 34. The apparatus as in Claim 24, wherein one of said plurality of memory controllers is
2 dedicated for use in handling requests received from a high data rate client.

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- 1 35. A method comprising:
2 receiving a first client request from a first video decoder;
3 routing the first client request to a first memory controller;
4 receiving a second client request from a second video decoder; and
5 routing the second client request to a second memory controller.
- 1 36. The method as in Claim 35, further including providing the first client request to a
2 first memory and the second client request to a second memory.
- 1 37. The method as in Claim 35, wherein routing is based on one or more of: an address, a
2 client identifier, client tag information, and data size.
- 1 38. The method as in Claim 35, wherein the number of requests routed to a memory
2 controller, from a particular client, is dependent on the data rate of the particular
3 client.
- 1 39. The method as in Claim 5, wherein the memory controllers are scalable.
- 1 40. The method as in Claim 35, wherein:
2 the first video decoder is an MPEG decoder;
3 the first client request is a first HDTV stream;
4 the second video decoder is an MPEG decoder; and
5 the second client request is a second HDTV stream.

[illegible]